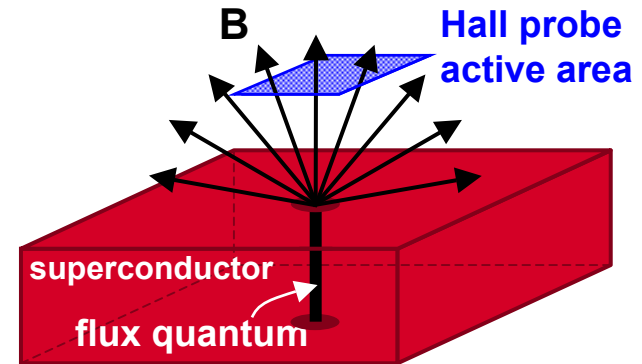


CAREER: Nanofabrication of Local Magnetic Sensors for Materials Physics I

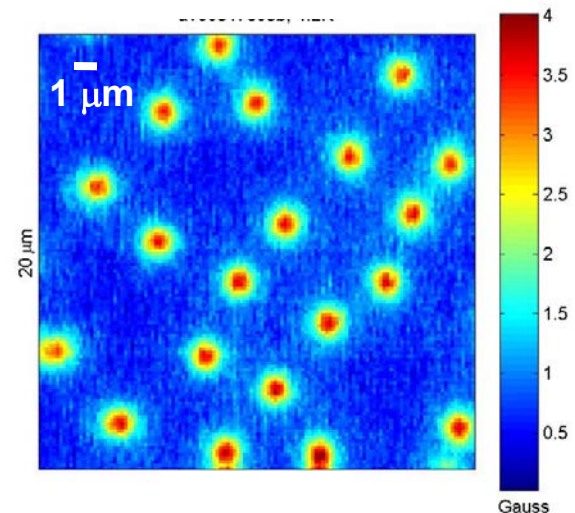
Kathryn A. Moler, Stanford University, DMR-9875193

We use nanofabrication to develop tools for magnetic imaging experiments to test basic theories of strongly correlated electron systems on the natural length scales associated with many electrons. These length scales are usually large compared to the size of an atom, but small compared to the size of a typical sample or device. Local measurements are also important because many interesting materials are inhomogeneous.

In our most recent experiment, we studied individual flux quanta in a particular superconductor to test the speculation that electrons might “break up” or “fractionalize” inside a strongly correlated electron material.



A 500 nm Hall probe measures the magnetic field of individual quanta of magnetic flux while scanning above a superconductor.



images by graduate student researcher Janice C. Wynn

CAREER: Nanofabrication of Local Magnetic Sensors for Materials Physics II

Kathryn A. Moler, Stanford University, DMR-9875193

Outreach activities: lectures and discussions at the CPIMA Career Day, the Partners in Science College Initiative Program, the Stanford summer research program, the Stanford Leadership Circle, Parents' Day, the Women's Center, the Stanford Channel, the Environmental Health & Safety video series, the Stanford Exploration Series, and the National Conference of Black Physics Students.

Student researchers

- 1 high school student
- 4 non-Stanford undergraduates
- 2 Stanford undergraduates
- 3 graduate students

Collaborators at IBM and CU-Denver



The PI often gives laboratory tours to nonscientists and high school students.